

NEW BATRACHIANS
FROM THE TROPICAL RESEARCH STATION
BRITISH GUIANA

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Among the Amphibia secured by Mr. William Beebe or by members of his staff while at the Tropical Research Station and substations maintained by the New York Zoological Society in British Guiana, there are included a number of new forms. The reptiles and amphibians collected by Mr. Beebe have already been reported upon in part (Beebe, 1919, *Zoologica* II, No. 7). Mr. Beebe has been kind enough to place in my hands his new species for description. The present paper deals with only the Amphibia collected. A second paper will consider the new reptiles obtained by Mr. Beebe. It is Mr. Beebe's intention to publish later a full account of the reptiles and amphibians found near the Tropical Research Station, together with a series of colored plates illustrating most of the forms described below. I have added to the following descriptions a diagnosis of one species found at the Zoological Society's Research Substation near the Kaieteur Falls, but represented in the collections at my disposal only by specimens secured by a former expedition.

Hyloxalus beebei sp. nov.

DIAGNOSIS

Readily distinguished from all other species of the genus by its small size, rudimentary webs and brilliant coloration in life. Preserved specimens are straw-color above with a dark stripe on either side of the head and body, and with an irregular stippling of dark brown on the back. From the species of *Phyllobates*, which it closely resembles, this species may be distinguished by the short but well-defined webs between the toes, and by its distinctive coloration.

* Tropical Research Station, Contribution Number 134.

TYPE

A.M.N.H. No. A-18683; adult ♀; near Kaieteur Falls, British Guiana; February 18, 1921; William Beebe.

DESCRIPTION OF TYPE

Size very small; snout rounded, a trifle longer than the greatest diameter of the eye; distance between nostril and tip of snout a trifle less than the distance between nostril and eye; interorbital space one and one-half times as broad as the upper eye-lid; tympanum nearly two-thirds the diameter of the eye, rather indistinct, less than its own diameter from the eye. Tibiotarsal articulations of either side in contact when the legs are placed at right angles to the body; tibiotarsal articulation reaching the posterior border of the eye. Digital dilations very small, the discs less than one-half the diameter of the tympanum; fingers free, the first finger not as long as the second; toes with a short but very distinct rudiment of a web; no fringe extending the length of the toes as in most species of *Hyloxalus*. Two metatarsal tubercles, the outer pointed and one-third the diameter of the inner which is not very distinct; a well-defined tarsal fold. Tongue ovate, slightly nicked behind. Skin smooth above, slightly granular on the sides; no well-defined folds on the back.

Ground tone in alcohol a pale straw-color; streak of dark brown from tip of the snout through the eye to the groin, this stripe very narrow on the head, broadening out behind the tympanum until it equals the greatest diameter of the latter, narrowing again on the sides of the body to disappear in the lumbar region; dorsal surface slightly stippled with the same brown tone; two pale streaks on either side of the back, extending from the eye to the pelvic region, free of this dark stippling; jaws and ventral surface immaculate; hinder and upper portion of the thigh indistinctly stippled with dark brown; upper surfaces of the lower limbs stippled with the same dark tone, the stippling tending to form three or more dark cross-bands. In life, the ground tone was a bright yellow and the pattern was much more distinct.

MEASUREMENTS

Tip of Snout to Vent	16.5 mm.
Tip of Snout to Posterior Border of Tympanum	5.8 "
Greatest Breadth of the Head.....	5.5 "
Distance from Axilla to Tip of Longest Finger	11.0 "
Distance from Vent to Tip of Longest Toe.....	26.0 "
Tibia	7.5 "

REMARKS

This distinctive species of *Hyloxalus* is of special interest because it seems to bridge the gap supposed to exist between *Hyloxalus* and *Phyllobates*. The species agrees entirely with *Phyllobates* in regard to its skeletal characters, and in most external features is similar to that genus, but the presence of the short web, much shorter than in any hitherto described species of *Hyloxalus*, prevents our referring it to *Phyllobates*. Undoubtedly, *Hyloxalus* is the more primitive genus, and it would be interesting to find the stock from which it arose. As I have pointed out elsewhere (Noble, 1922, Bull. A.M.N.H., Vol. XLVI, pp. 1-87), the brachycephalids have been derived from bufonid ancestors. It is highly probable that the stock from which *Hyloxalus* has been derived will be found in the *Buфонidae*.

The type specimen described above, although only 16.5 mm. in total length, possessed seven eggs within the ovaries, averaging 2 mm. in diameter. These eggs were heavily pigmented. All Salientia which lay eggs of such enormous size deposit them on land. It is therefore very probable that *Hyloxalus*, in spite of the web between its toes, is purely terrestrial and lays its eggs in moist situations similar to those utilized by *Eleutherodactylus*.

Hyla ornatissima sp. nov.

DIAGNOSIS

A medium sized *Hyla* possessing arched vomerine teeth which form a shallow \cap ; fingers two-thirds webbed, toes nearly

entire webbed. Tibiotarsal articulation extending beyond the snout. Gaudy coloration of pinks and browns; two dark, pink-edged spots on the snout; a dark interorbital bar and a diamond shaped spot just anterior to the pelvis, similarly edged with pink.

TYPE

A.M.N.H. No. A-13491; adult ♀; Meamu, Mazaruni R., British Guiana; June 10, 1920; William Beebe.

DESCRIPTION OF TYPE

Tongue as long as broad, unemarginate behind; vomerine teeth in two slightly arched series nearly in contact with each other and directed slightly forward; the anterior margin of the arch on a level with the posterior border of the choanae. Head exactly as long as broad; nostrils near the end of the snout; interorbital space slightly more than half as great as the distance between nostril and eye; head greatly flattened with concave loreal region and prominent snout; interorbital space twice the diameter of the upper eye-lid, slightly greater than the greatest diameter of the eye; no ossification in the derm of the head; tympanum distinct, its greatest diameter less than half the greatest diameter of the eye. Tibiotarsal articulation extending beyond the tip of the snout. Digits with well-defined discs, these a trifle less than the greatest diameter of the tympanum; fingers two-thirds webbed; toes fully webbed, except that the web hardly extends beyond the base of the penultimate phalanx of the fourth toe; no external evidence of a rudiment of the prepollex. Skin smooth above, slightly granular on the belly; no folds on the back or sides of the body.

Ground color, in preserved specimens, pale straw-color or yellowish; dorsal surface finely sprinkled with small pink spots; a dark brown spot on either side of the snout edged with pink; a dark spot on each upper eye-lid and an interorbital bar of the same color, these outlined by the same pinkish tone; a dark diamond-shaped figure just anterior to the pelvis, continued posteriorly in a narrow coccygeal stripe; two small spots anterior to the diamond-shaped figure of the same tone, this figure broadly edged with pink, a few irregular pink blotches along the coccy-

geal stripe and near the anterior spots; tips of the toes brownish; two dark spots on the forearm; a few small pinkish spots on the upper surface of the limbs; a few small pinkish spots and three or four dark ones on the upper surface of the hind limbs; ventral surface immaculate except for the tips of the fingers and toes which are brownish.

MEASUREMENTS

Tip of Snout to Vent.....	40.0 mm.
Tip of Snout to Posterior Border of Tym-	
panum	12.5 "
Greatest Breadth of the Head.....	14.0 "
Distance from Axilla to Tip of Longest	
Finger	22.5 "
Distance from Vent to Tip of Longest toe.....	70.0 "
Tibia	23.0 "

REMARKS

The species is represented in the collection by only a single specimen which was captured by an Indian and brought to the Zoological Station. Its gaudy coloration in life readily distinguishes it from the other Guianan hylas.

***Leptodactylus stictigularis* sp. nov.**

DIAGNOSIS

A medium sized *Leptodactylus*, having a broad head; chestnut or reddish brown dorsal coloration; conspicuous whitish or pink upper lip and a dark throat studded with white spots. Tibiotarsal articulation extending to the middle of the eye; toes bearing narrow dermal fringes; skin smooth or granular; two well-defined dorso-lateral folds extending from eye to groin.

TYPE

A.M.N.H. No. A-10398; adult ♂; Kartabo, British Guiana; 1919; William Beebe.

DESCRIPTION OF TYPE

Size moderate; head flattened, a little broader than long; snout distinctly longer than the greatest diameter of the eye; dis-

tance between tip of snout and nostril contained twice in the distance between nostril and eye; interorbital space one and one-third times as broad as the upper eye-lid, about equal to the greatest diameter of the eye; canthus rostralis rounded but rather distinct; the loreal region concave; tympanum two-thirds the greatest diameter of the eye, separated from the eye by a space equal to half its own diameter. Tibiotarsal joints of either side overlap when the legs are placed at right angles to the body; tibiotarsal articulation, when extended forward, marks the middle of the eye. Digits slender, terminating in very small discs; first finger very long; second finger only two-thirds as long as the first; toes slender, bordered with a narrow fringe; sub-articular tubercles pronounced; two metatarsal tubercles, the outer two-thirds the length of the inner; a well-defined tarsal fold. Tongue large, slightly nicked behind; vomerine teeth in two arched groups nearly in contact with each other and touching the posterior border of the choanae; the most anterior part of each arch anterior to the posterior edge of the choanae. Skin smooth or slightly granular; a well-defined dorso-lateral fold extending from the eye to groin; ventral surfaces smooth, no abdominal disc.

Ground tone chestnut brown; upper lips broadly edged with gray; a grayish interorbital bar; the canthus and the dorso-lateral fold edged with dark brown; the supra-tympanic fold of the same color; posterior surfaces of thighs very dark brown; three or four rows of irregular whitish spots studding this dark area; three ill-defined dark bars on the dorsal surface of the thighs, three or four on the lower limbs; soles of feet very dark brown, parts of the lower leg suffused with the same color; sides of the body milky, stippled with the chestnut ground tone; ground tone of ventral surface white; throat a dark brown studded with numerous white spots; periphery of abdomen densely stippled with brown; middle of abdomen and distal portions of the thighs lightly stippled with the same color.

MEASUREMENTS

Tip of Snout to Vent.....	56.0 mm.
Tip of Snout to Posterior Border of Tympanum	20.5 "

Greatest Breadth of Head.....	23.0	“
Distance from Axilla to Tip of Longest Finger	34.0	“
Distance from Vent to Tip of Longest Toe....	84.0	“
Tibia	27.0	“

REMARKS

The species is represented in our collections by a single paratype. It differs but little from the type in color. The dark throat color is indistinctly continued on the anterior part of the abdomen, but here the white spots have given place to white blotches. The pale stripe on the upper lip is pink in this specimen, and the interorbital bar is of the same color.

L. stictigularis seems to be most closely allied to *L. rhodomystax* Boulenger, from which it differs in its longer leg, somewhat differently arranged vomerine teeth and different coloration. *L. rhodomystax* has been recorded from British Guiana by Ruthven (1919 Occ. Papers Mus. Zool., Univ. of Mich., No. 69, p. 4.) I have recently had the opportunity of examining Ruthven's specimens and find them to be unquestionably the young of *L. pentadactylus*. This leaves the question open as to whether or not *L. rhodomystax* might not have been based upon a juvenile specimen of that species. This question can only be answered by examination of the types.

***Leptodactylus minutus* sp. nov.**

DIAGNOSIS

A minute *Leptodactylus* lacking fringes to the toes and without dorsal folds; skin glandular, but never warty; an irregular series of dark spots above, these sometimes forming an interorbital bar and a symmetrical pattern on the shoulders. Apparently closely allied to *L. pulcher* Boulenger, from which it is distinguished by its different color pattern and shorter leg; somewhat similar to the immature *L. caliginosus* and *L. typhoni*, distinguished from these by the characters already mentioned.

TYPE

A.M.N.H. No. A-13495; adult ♀; Bartica District, British Guiana; January 8, 1916; William Beebe.

DESCRIPTION OF TYPE

Size very small; head distinctly longer than broad; distance between tip of snout and nostril contained twice in distance between nostril and eye; interorbital width one and one-half times as broad as the upper eye-lid, equal to the greatest diameter of the eye; canthus rostralis rounded, the loreal region sloping gradually; tympanum very distinct, one-half the greatest diameter of the eye, separated from the eye by a trifle less than half its own diameter. Tibiotarsal joints of each side strongly overlap when the legs are placed at right angles to the body; tibiotarsal articulations mark the anterior corner of the eye when the legs are extended forward. Tips of digits not swollen into discs, only slightly larger than the diameter of the penultimate phalanges; first finger a trifle shorter than the second; toes slender, not fringed; subarticular tubercles pronounced; two well-defined metatarsal tubercles; a tarsal fold. Tongue ovoid, slightly nicked behind; vomerine teeth in two slightly arched series well behind the choanae, separated from each other by a space equal to their distance from the choanae. Skin slightly glandular but not warty above, a few feeble warts on the sides of the body tending to form an ill-defined dorso-lateral fold; ventral surface smooth, a very pronounced abdominal disc.

Ground tone of dorsal surface dull olive-gray; three pale stripes running the length of the back, the two outer pale stripes irregularly suffused with pink; the whole dorsal surface, excepting the pale bands, irregularly spotted with dark brown; about twelve spots on the back and four on each side of the body ventral to the pale streak; two or three dark spots on each upper jaw; a series of dark spots forming cross bars on the limbs; hinder surface of thighs suffused with brownish; ventral surfaces immaculate excepting for a delicate suffusion of brown on the throat and hind limbs.

MEASUREMENTS

Tip of Snout to Vent	22.0 mm.
Tip of Snout to Posterior Border of Tympanum	8.0 "
Greatest Breadth of Head.....	7.5 "
Distance from Axilla to Tip of Longest Finger	12.5 "
Distance from Vent to Tip of Longest Toe.....	37.0 "
Tibia	11.0 "

REMARKS

The six paratypes show a considerable range of variation in color; the ground tone may be very pale or somewhat darker than in the type; a well-defined interorbital bar may be present forming a regular cross with a scapular marking; the other spots on the back may have a very symmetrical or irregular arrangement; the dark spots on the upper jaw usually form a very well-defined series; the three dorsal stripes are not as well-defined in the paratypes as in the type; in three of the specimens there is no indication of these light streaks.

Leptodactylus rugosus sp. nov.

DIAGNOSIS

A small species, very similar to *L. caliginosus*, but with a broader head, shorter leg and very rugose dorsum. It is further distinguished from that species by its large tympanum, different coloration, and absence of nuptial spines in the breeding male.

TYPE

A.M.N.H. No. A-1169; adult ♂; near Kaieteur Falls, British Guiana; August 13, 1911; F. E. Lutz.

DESCRIPTION OF TYPE

Size small; head flattened, as long as broad; snout longer than the greatest diameter of the orbit; interorbital space narrower than the breadth of the upper eye-lid, much less than the greatest diameter of the eye; canthus rostralis rounded; loreal

region slightly concave; tympanum two-thirds the greatest diameter of the eye, separated from the latter by a space less than half its own diameter. Tibiotarsal joints of either side barely overlap when the legs are placed at right angles to the body; tibiotarsal articulation when extended forward reaches the anterior border of the tympanum. Digits slender, without terminal dilations; first finger longer than the second; toes slender, without fringes; subarticular tubercles pronounced; two metatarsal tubercles, the outer two-thirds the length of the inner; a well-defined tarsal fold. Tongue large, slightly nicked behind; vomerine teeth in two arched series on a level with the posterior border of the choanae, and nearly in contact with each other in the mid-line; anterior edge of each arch not extending forward beyond the choanae. Skin very rugose above, some of the tubercles forming short folds which run cephalo-caudad on the back; upper eye-lids covered with numerous warts; a few warts on the snout and dorsal surface of the limbs.

Ground tone above reddish brown, a few indistinct paler marks on the upper lip, and numerous pale mottlings on the posterior surfaces of the thighs; some indication of dark cross-bands on the upper and lower legs; ventral surfaces straw-colored, heavily blotched with brown, the spotting darkest on the throat and palest on the ventral surfaces of the thighs.

MEASUREMENTS

Tip of Snout to Vent.....	38.0 mm.
Tip of Snout to Posterior Border of Tympanum	15.5 "
Greatest Breadth of Head	16.0 "
Distance from Axilla to Tip of Longest Finger	21.5 "
Distance from Vent to Tip of Longest Toe.....	55.0 "
Tibia	17.5 "

REMARKS

The four paratypes in our collection range from 16.5 to 41.0 mm. head and body length. They show very little variation

in either coloration or structural characters. The pale bars on the upper lip are very distinct in the largest specimen and some indication of an interorbital bar is present. The venter of all four paratypes is either immaculate or lightly spotted with brown.

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